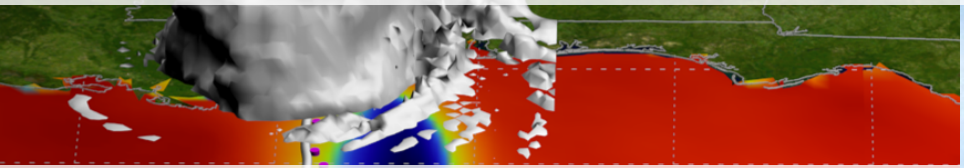
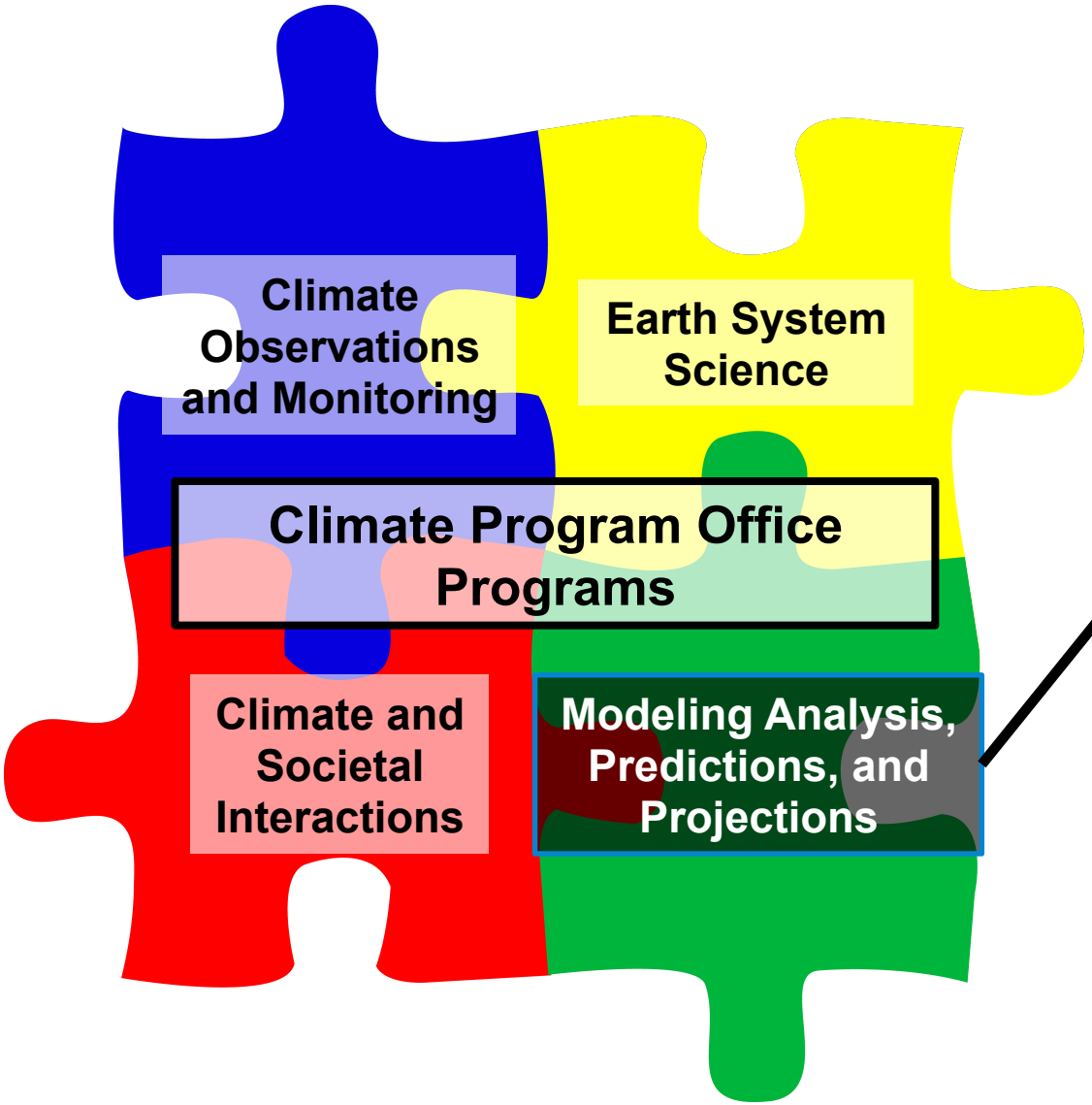
NOAA's Climate Program Office

Modeling, Analysis, Predictions, and Projections Program



Don Anderson
Annarita Mariotti
Dan Barrie

MAPP Program



NOAA/OAR/CPO/MAPP

A mission-oriented competitive research program at the interface between basic Earth system science and operational/service needs.

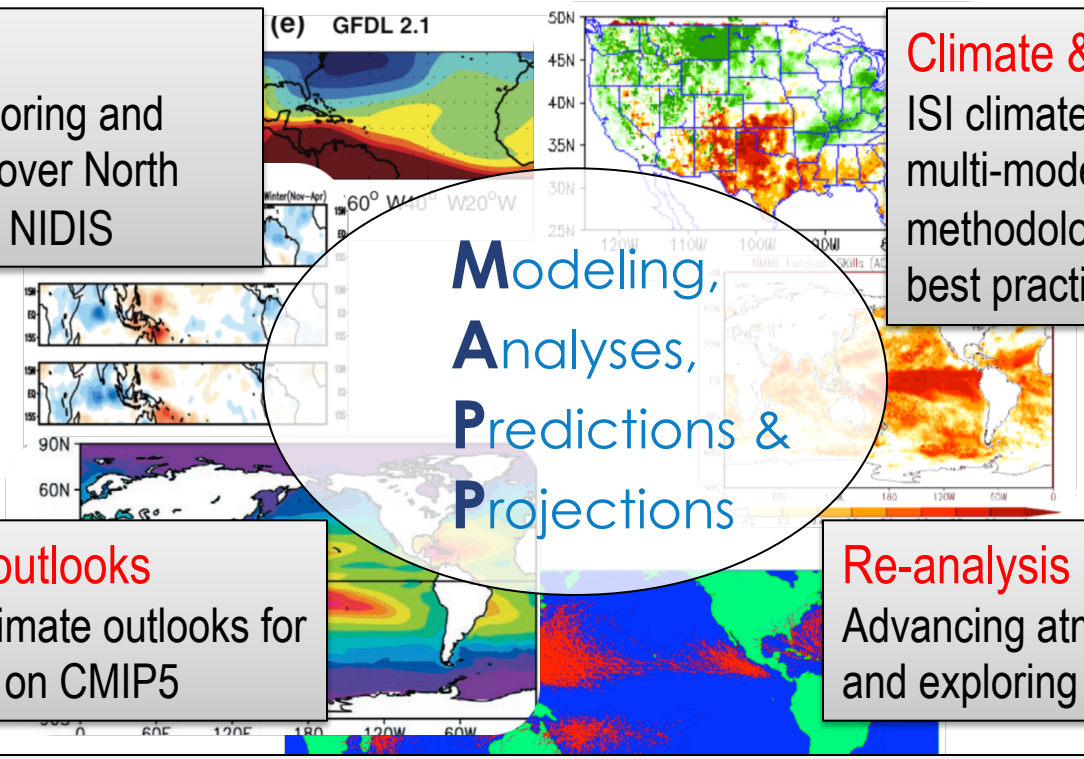
Program Managers:
- Don Anderson (Lead)
- Annarita Mariotti
- Dan Barrie

MAPP
Modeling, Analysis, Predictions, and Projections

Current MAPP Research Thrusts

Drought
Understanding, monitoring and prediction of drought over North America in support of NIDIS

Climate & Extremes Prediction
ISI climate prediction based on multi-model (NMME), multi-methodology approaches and best practices.



Long-term climate outlooks
Long-term regional climate outlooks for North America based on CMIP5

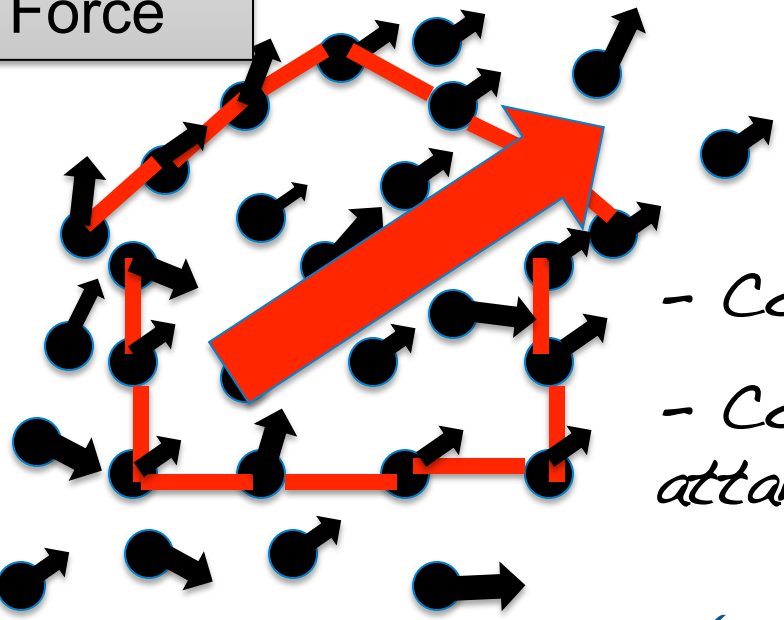
Re-analysis
Advancing atmospheric re-analysis and exploring the potential for IESA

Model Development
Improving global climate and Earth system models via CPTs and high-resolution/regional experimentation

Partnerships with NCEP's Climate Test Bed and NIDIS

The MAPP Task Forces

A new approach..
- A Drought Task Force
- A CMIP5 Task Force
- A Prediction Task Force



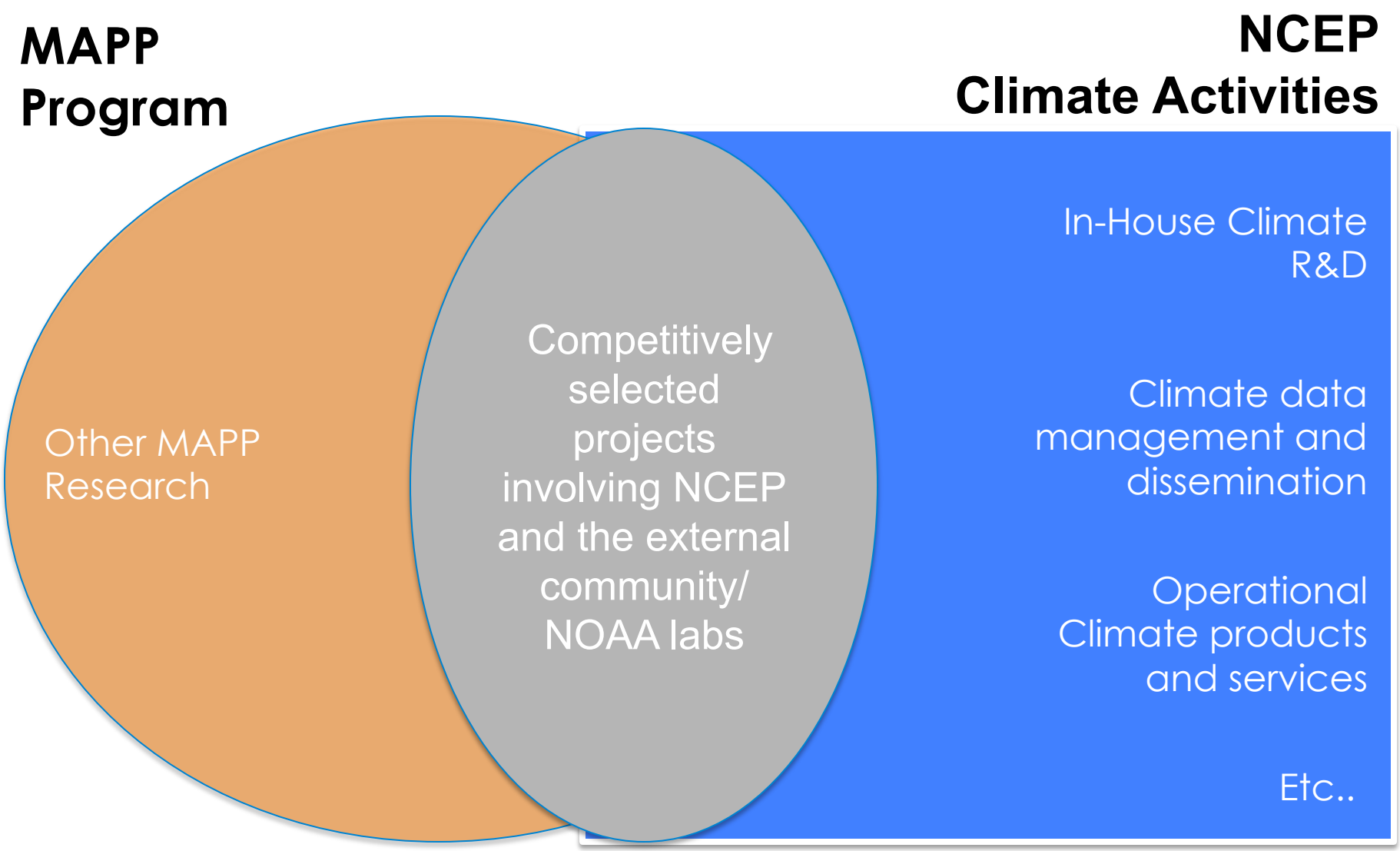
New or advanced knowledge/capability

- Connecting the dots.
- Combining forces to attain greater advances

Current knowledge/ capability

Very different from drizzling $ over research areas..

MAPP and NCEP Climate Activities



Current MAPP-NCEP Research Areas

1. Climate model development (CPT)
2. ISI climate prediction (including a regional scales focus)
3. Drought monitoring and prediction in connection with NIDIS
4. Re-analysis research and development

Of the above, model development, climate prediction and drought currently involve NCEP-CTB

MAPP-CTB Research

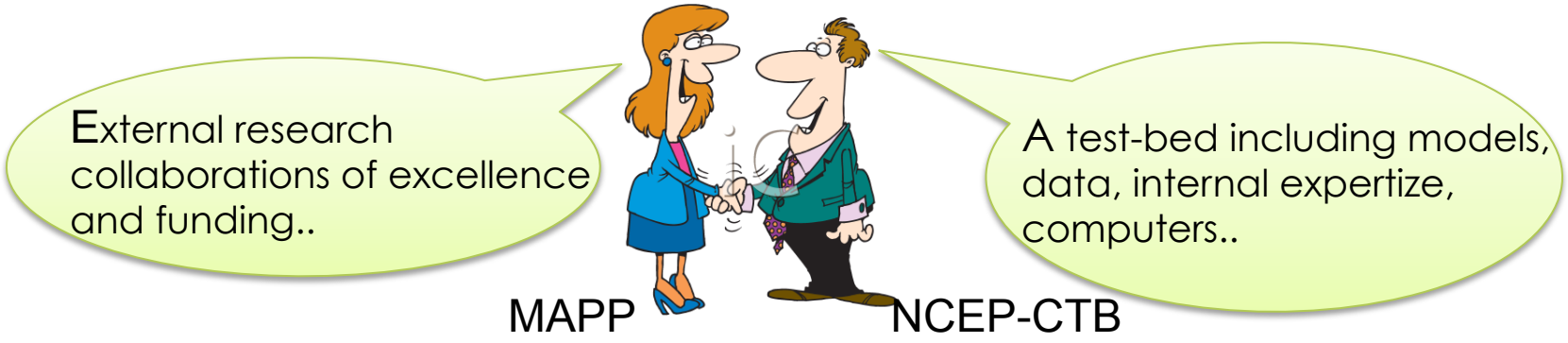
GOAL: Test and evaluate climate modeling and prediction research advances for improved NOAA operations.

A goal shared by MAPP and NCEP-CTB

Not any MAPP research project.. need the "right" research questions, interest/support to work with NCEP and vice-versa, a clear outcome that can inform operational implementation

A Partnership for MAPP-CTB Research

- A partnership established by the 2012 MAPP-CTB Execution Agreement



- A new process ($ does not suffice..):
  - Competitively select MAPP-CTB projects of clear interest to NCEP, including metrics to test research advances
  - A systematic assessment of the outcomes for operational use and implementation potential by NCEP.

Examples of MAPP research activities involving CTB

MAPP Drought Task Force Research

Who/What

-A multi-agency/multi-institution group of 30-plus MAPP Investigators research involving CTB

- Research projects exploring improved methodologies for drought monitoring (e.g. remote sensing) and prediction (e.g. NMME)

Roles

- Providing focus, coordination and leadership to MAPP funded drought research in support of NIDIS

-Extending NOAA's research capability via external collaborations

-Improving NOAA operations via CTB

-Contrib
Internati

Drought Task Force

Advancing U.S. drought monitoring and prediction

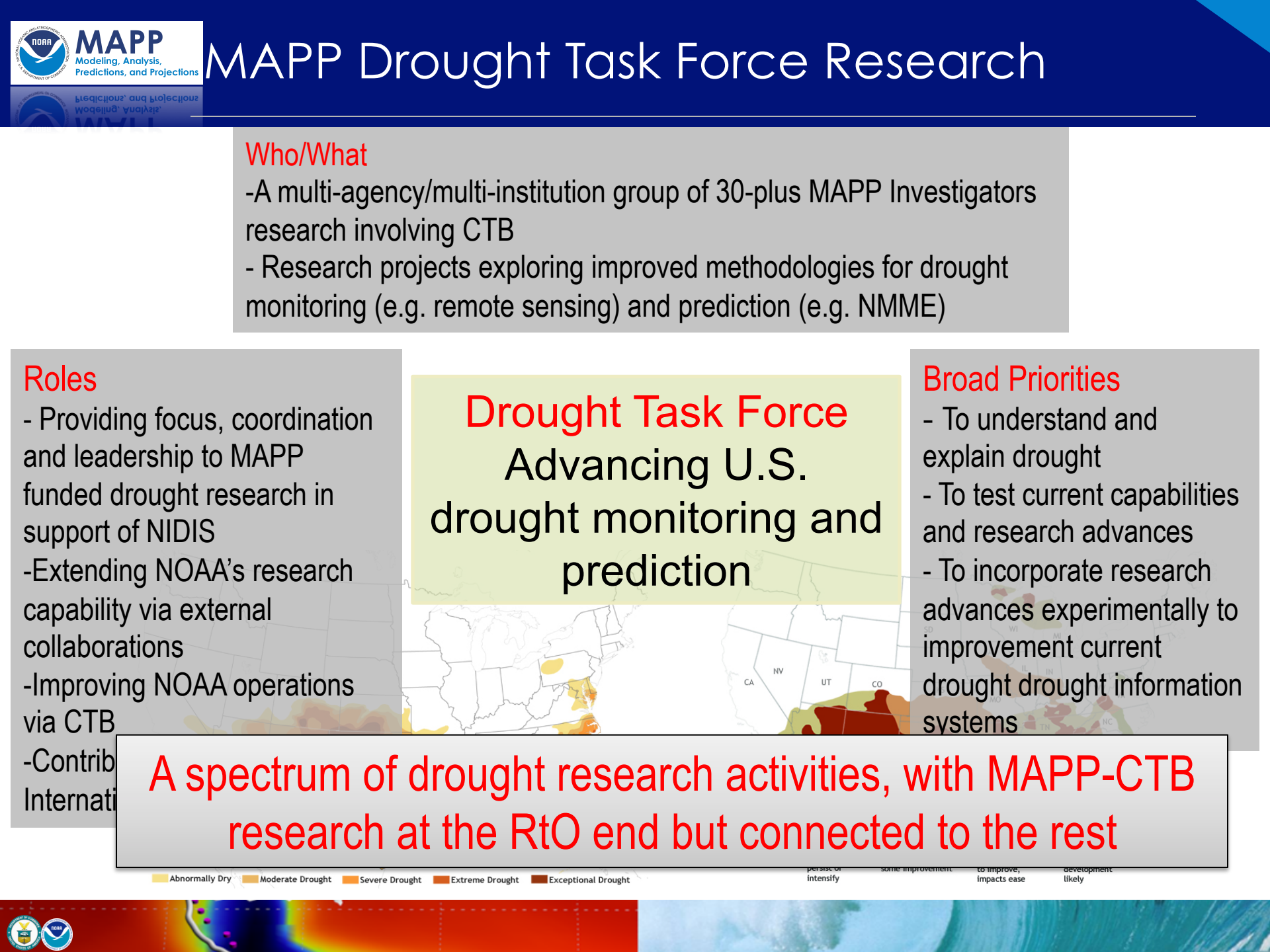
Broad Priorities

- To understand and explain drought

- To test current capabilities and research advances

- To incorporate research advances experimentally to improvement current drought drought information systems

A spectrum of drought research activities, with MAPP-CTB research at the RtO end but connected to the rest



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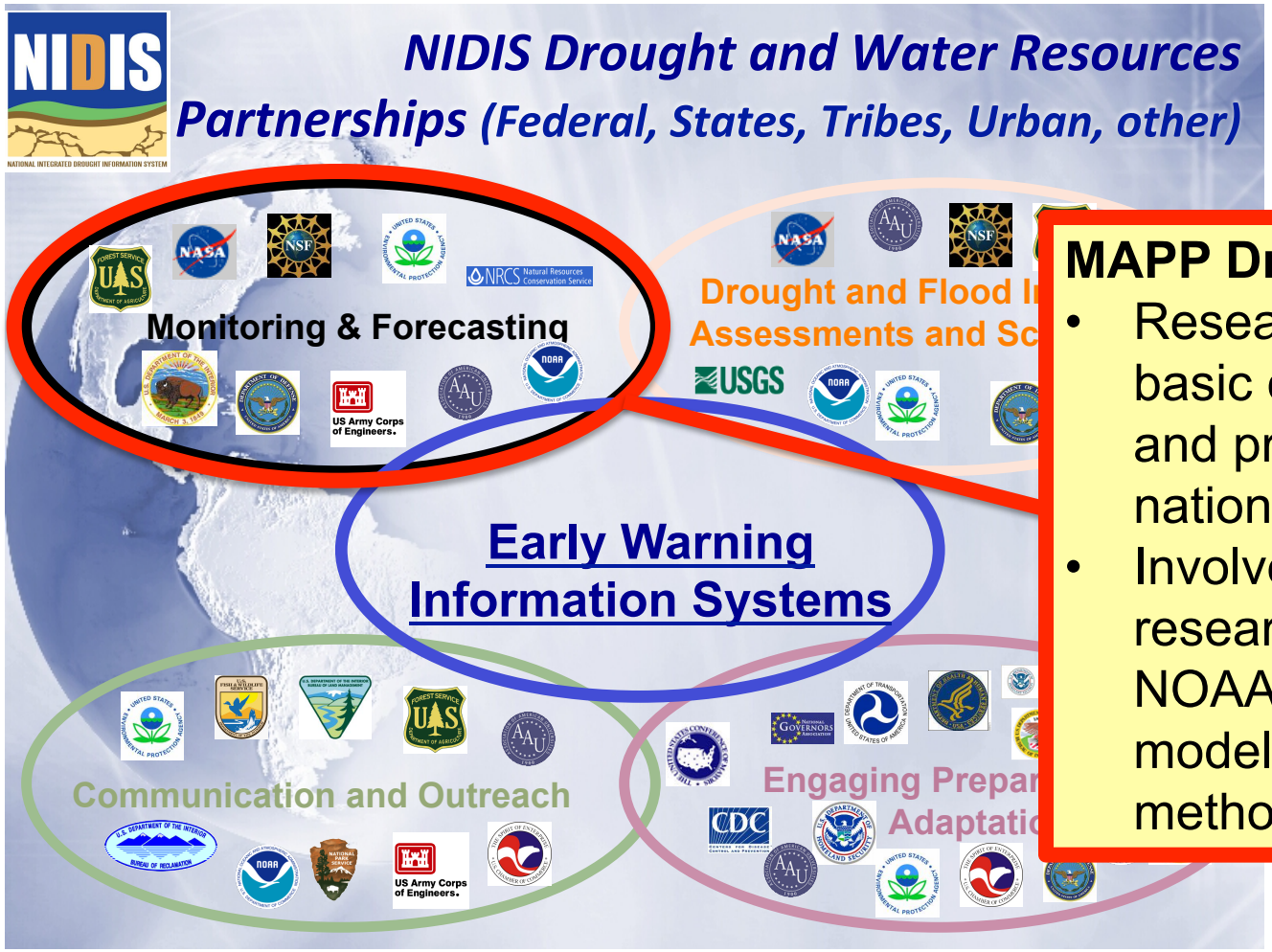
Drought Task Force-NIDIS-CTB



MAPP Drought Task Force

- Research to improve the basic capability to monitor and predict drought, at national and regional scale.
- Involves **Climate Test Bed** research to improve NOAA's operational climate models and prediction methodologies

NMME to improve ISI climate and drought prediction

An experimental U.S. multi-model ensemble (NMME)

A broad multi-institutional interagency-funded MAPP-CTB research project:

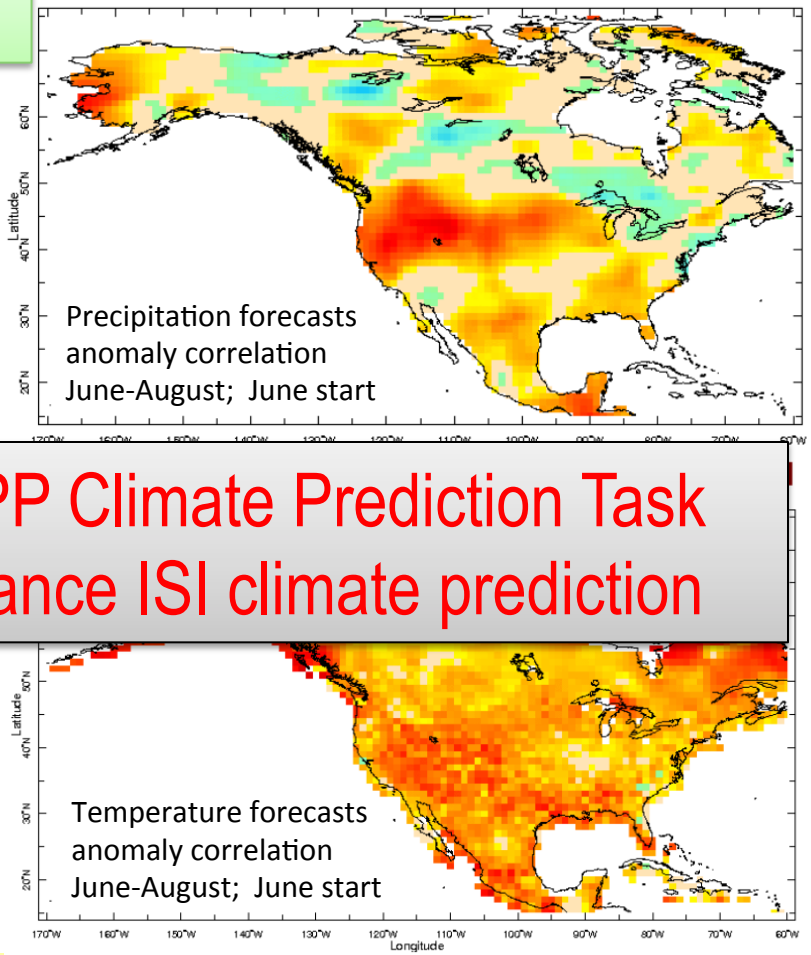
- 2 year project involving U Miami, GFDL, NCEP, ESRL, NCAR, NASA, IRI, U of Princeton, COLA
- With NOAA/NSF/DOE/NASA support.
- Address prediction research questions and test spe… sys…

Statu… expe… assessment of skill based on various MME configurations

Potential Outcomes/Payoffs:

- An optimal design of a multi-model system for probabilistic drought prediction

NMME Forecast Verification analyses



This project is part of the MAPP Climate Prediction Task Force, a broader effort to advance ISI climate prediction

Courtesy of IRI

Closing Considerations

MAPP-CTB Research Opportunities

- FY12: Develop an experimental National Multi-Model Ensemble climate prediction system
- FY13: Research to Advance Climate and Earth System Models - Climate Modeling and Process Teams including a CTB opportunity
  - Cryospheric processes
  - Cloud and cloud-radiative processes

- These are significant given current MAPP budget situation
- Both FY12 and FY13 projects follow the new process, including a final review

MAPP
Modeling, Analysis, Predictions, and Projections

Challenges

- Budget for MAPP-CTB activities is insufficient and uncertain (MAPP was reduced by over 30% in FY12)
- NCEP-CTB internal dedicated resources (ref. NCEP AOP) to support research projects unclear..
- Once a MAPP-CTB project delivers a capability advancement as an outcome of research how will NCEP introduce it into operations? E.g. NMME or new drought monitoring tools, how will they be utilized once the MAPP-CTB research project is over?
- Failure in the above will discourage future RtO research investments.

MAPP
Modeling, Analysis, Predictions, and Projections

Opportunities

- A MAPP and NCEP CTB RtO shared goal and an unprecedented partnership
- A new process in place to select the “right” projects, follow-them through, and define outcomes for operation
- MAPP Task Forces provide the opportunity to connect NCEP-CTB with other research efforts
- New opportunities with NCEP’s new facility and current momentum to reorganize/optimize NCEP’s climate activities
- NCEP-CTB has the opportunity to work with other programs/agencies, depending on its interest, not just MAPP.